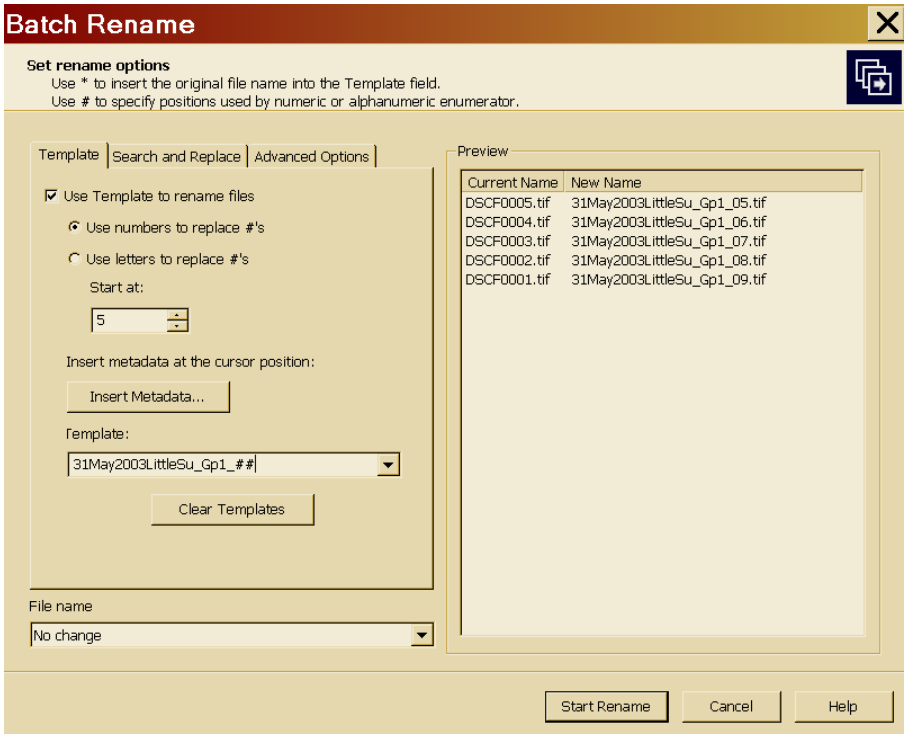
PROTOCOL FOR EXPORTING EXIF METADATA INTO AN MS ACCESS DATABASE

Most digital cameras automatically store data as well as image information into each image file each time a photograph is taken. These data, called Exchangeable Image File, or EXIF metadata, contain information such as date, time, camera model shutter speed, focal length, and exposure settings, to name a few. These are usually the same data we store in databases along with other data for each photograph we use. This protocol demonstrates a method for exporting metadata to a text file and importing that text file directly into an Access[1] database table.

Before we import image file metadata into a database, we rename our image files with a descriptive name. We use the photo browsing and editing software such as ACDSee 6.0[1] to batch rename our digital images files in one step. Make sure that your editing software conserves metadata of the image file after editing and saving an image. When we shoot RAW format images (we recommend this), we batch rename the RAW files and then use the camera software to convert files from RAW to TIFF format. We archive the RAW files and do all the edits and browsing using the TIFF files.

When deciding on a naming protocol, consider using the date (confirmed from the metadata), location, boat name, photographer initials and sighting number as part of the name. This will make it easier to identify files later. For example, for images taken this summer on the Cook Inlet Beluga survey, we used date, location, group number and frame number for file names (31May03LittleSuGp1_01).

Below is an example of batch renaming in ACDSee 6.0. This option can be found under "Tools" in the main window menu.

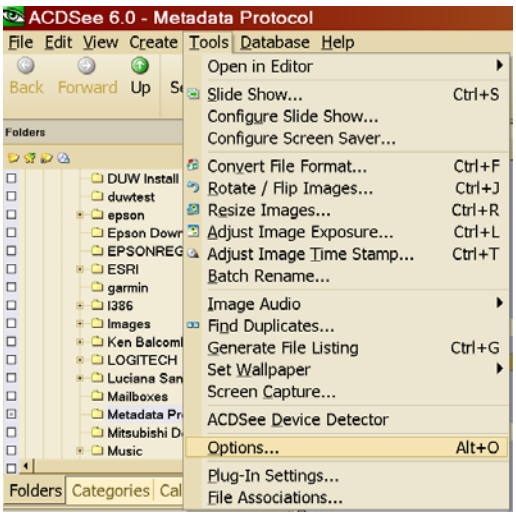


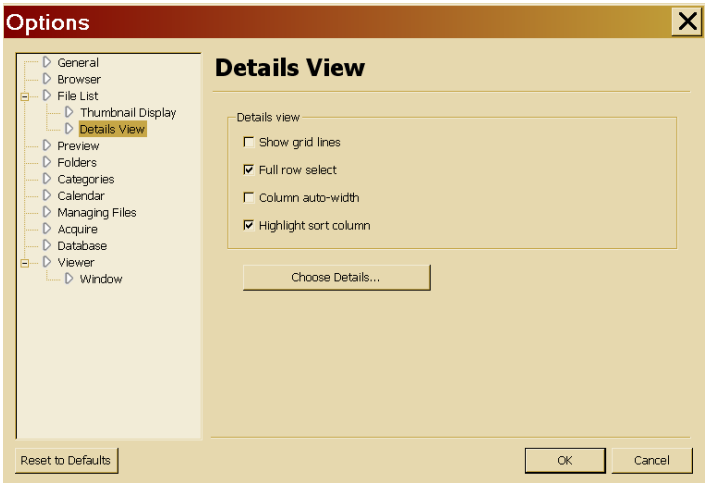
[1] Use of this or any other product name does not imply that NOAA endorses this product.

Step 1: Exporting Metadata from ACDSee 6.0

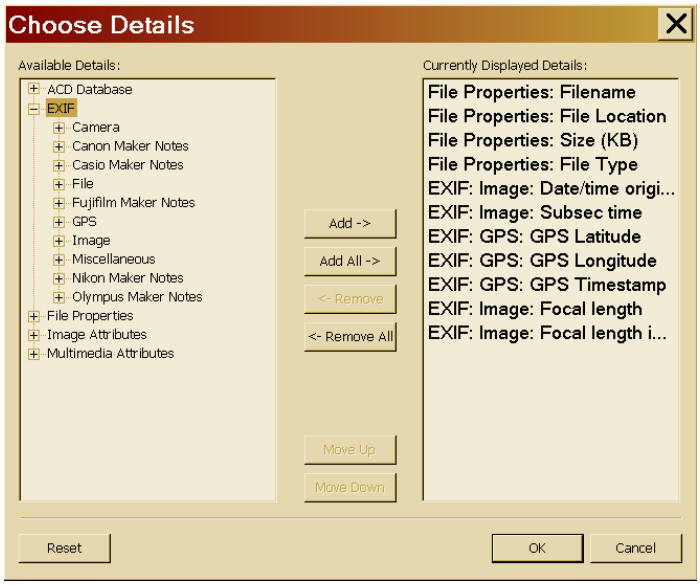
The following is a description of how ACDSee 6.0 allows you to select file properties to be displayed as details of the image file and then export the details as a text file. Note that all metadata will continue to be stored with the image file, but you will select which data will be displayed for purposes of exporting for use in a database.

Tools, Options, File list, Details View-Choose Details





The EXIF section contains camera specific metadata options (which varies based on the type of camera used), as well as data of image and GPS attributes.



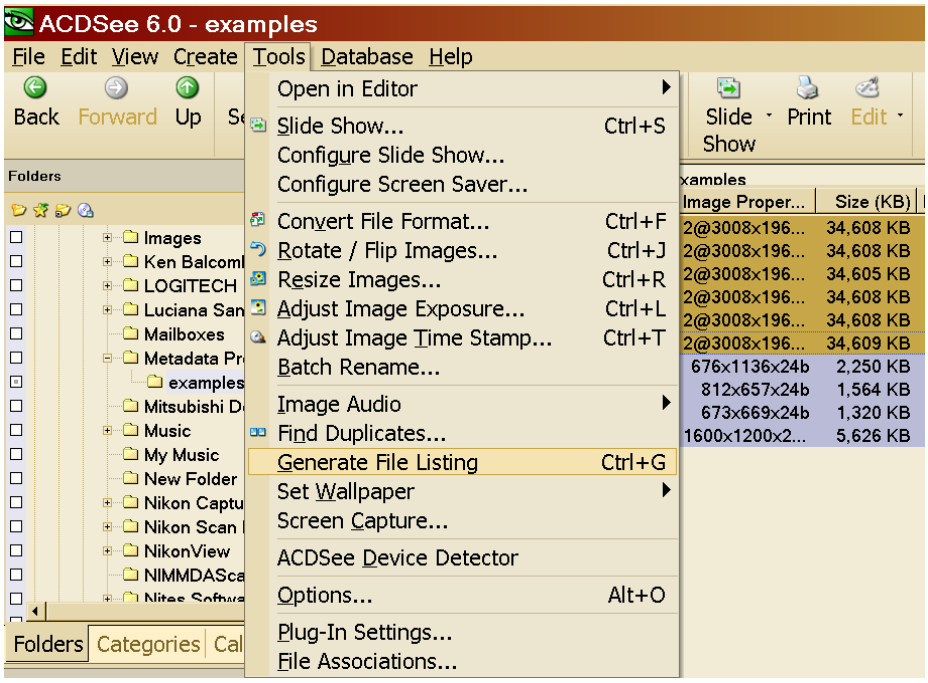
For the beluga project, we selected file location (on the computer hard drive) to make it easier to locate the image file, file size and type to tell us more about each file. These options were found under File Properties. Date/Time original and subsec to show the date and time (down to the 1/100th of a sec) the image was taken. GPS Latitude and Longitude were also chosen although we did not have that metadata for this group of pictures, we plan to use that option next year. For now, the columns created by the GPS Latitude and GPS Longitude were used for the latitude and longitude collected for each encounter. Focal length and Focal length equivalent (apparent digital focal length) were also chosen to provide information on the focal length at which the pictures were taken.

Because some cameras record down to 1/100th of a second, we found that we could characterize photo sequences by looking at frame-by-frame images to see how quickly the shots were taken even within a single second.

Step 2: Generate File list for export

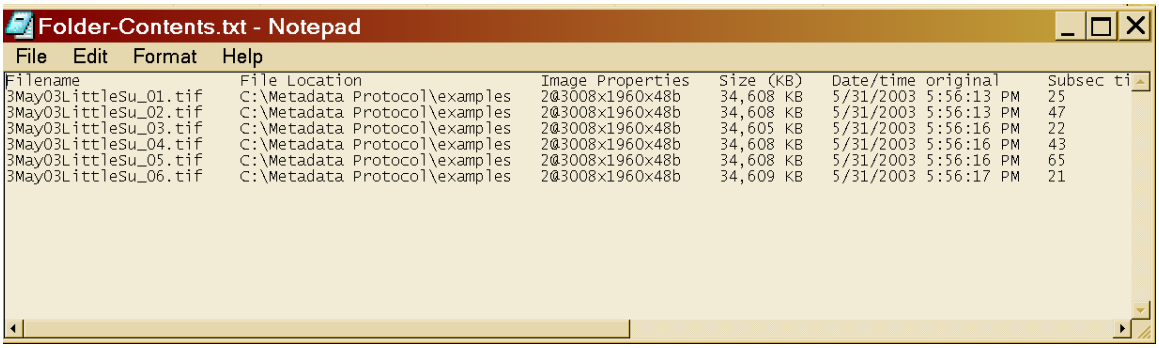
Move all image files that are to be added to the database table into a folder that contains only the image files. If you have other files in that folder, the list will also show all the non-image files and you will have to delete those before importing the image file list into the database.

Under “Tools” select “Generate File Listing” to create a text file of the details of the folder’s files.



Step 3: Edit Text file of generated list

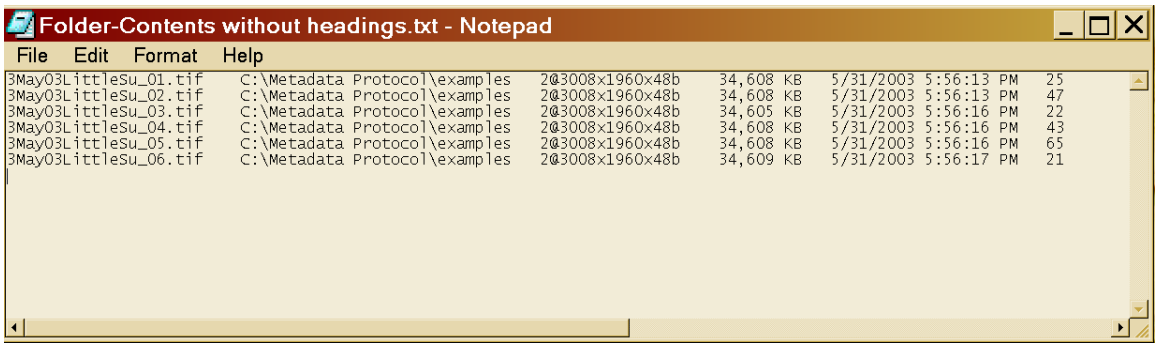
Delete all blank and filler lines in the text document. Leave the headings of the columns and use "save as" to save this file in an easy to find directory of your choosing. Use a file name that indicates this file has the column headings. These headings will be helpful later when importing the text file into Access and creating a new table.



If you are not importing data repeatedly, you may chose to do a quick and simple import using the text file with the headings and skip the following section about import specifications. By just running through the import wizard in MS Access, you can simply create a table and then use the Access table design to name the column names and define data types. Column widths will have to be adjusted to allow for double-digit dates and times. Column lines will have to be moved or deleted where the import wizard "guessed" wrong about column sizes. The data type for the time column will have to be adjusted to "text" in the import wizard's advanced settings or the time will not import into the table.

We found that by initiating import with the text file with the column names, it was easier to create the import specifications that define column names and column widths. The file import wizard in Access guessed better about column boundaries when the column names included in the text file.

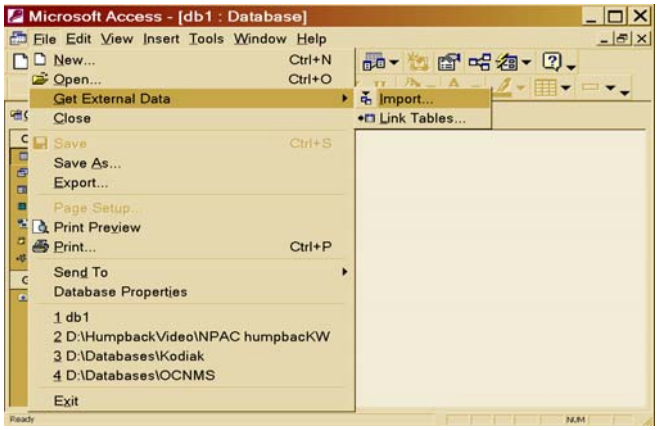
Once you've set up and saved the import specifications, save the text file without headings as shown below for later import.



Step 4: Import text file into Microsoft Access

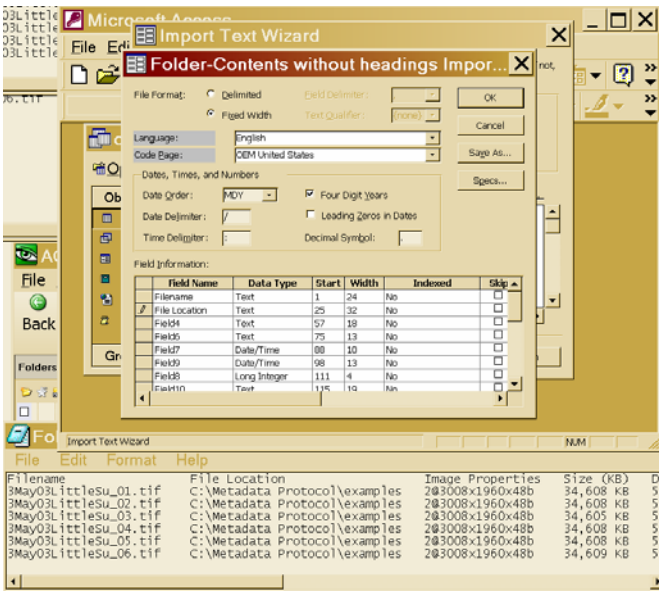
Create an Access database

Create a database in Access and select "import data" under the file option. For the first setup of the database table, it is best to start the import with the text file that includes the headings. When doing this, you will create and save import specifications and then cancel the import. Run through the import text wizard option to help set up your table.



Import Text Wizard

Use Fixed Width and then proceed to Next>



Adjust Column Widths

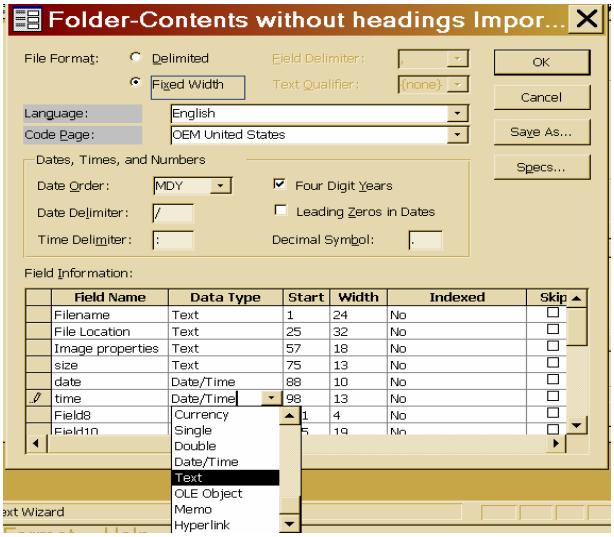
Move column bars to ensure enough space between columns. Remove unnecessary column markers. Make sure to leave a leading space to allow for double-digit dates and times.

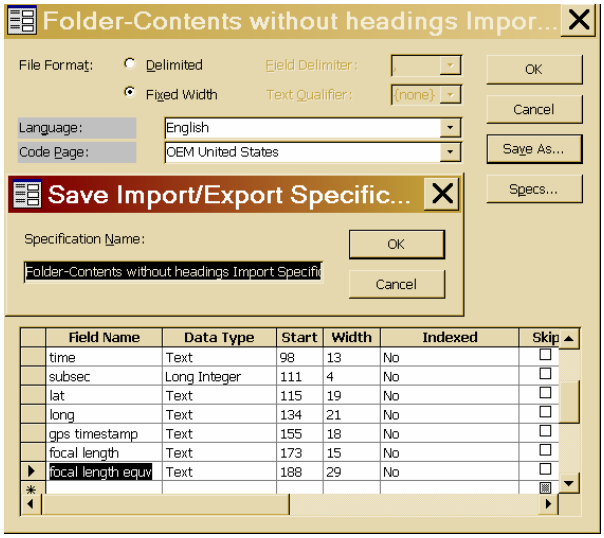
Advanced…

Change field names to reflect columns of database table.

Change data type to correctly reflect data

Note: If you set "Time" to date/time data type in the wizard, it creates import errors and time will not be imported into the Access table. It is best to set the time data type as text when importing and then change the data type to "date/time" within the Access database table design later.





Save Import Specifications

"Save As"- Name specifications for the import table set up that you have created. You can use these specs again later when you need to import more data.

Cancel Import

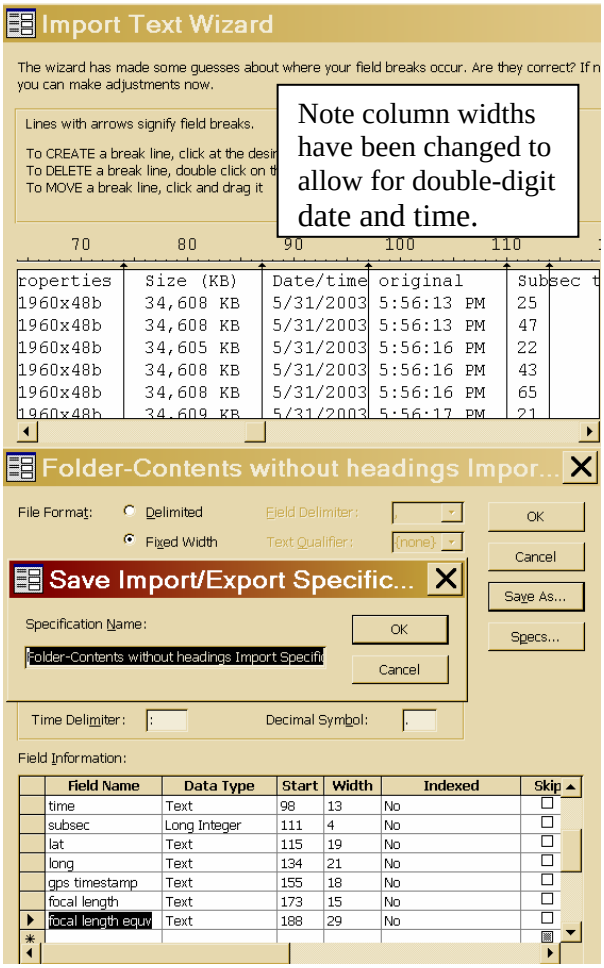
Importing the data with this text file will create a table where the first row is actually the column names. After saving the specs, cancel the import and restart the import using the text file without headings.

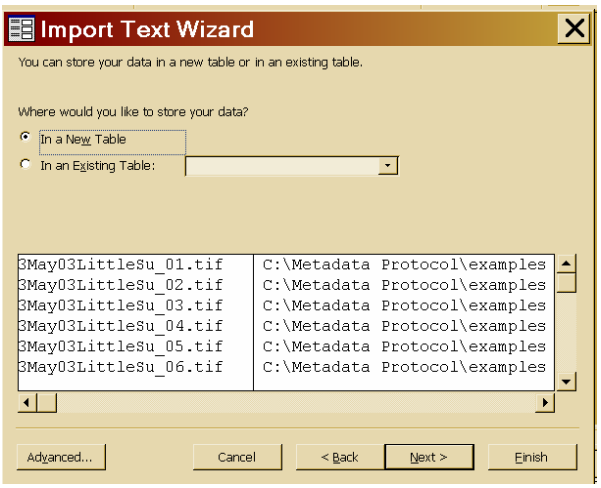
Restart Import

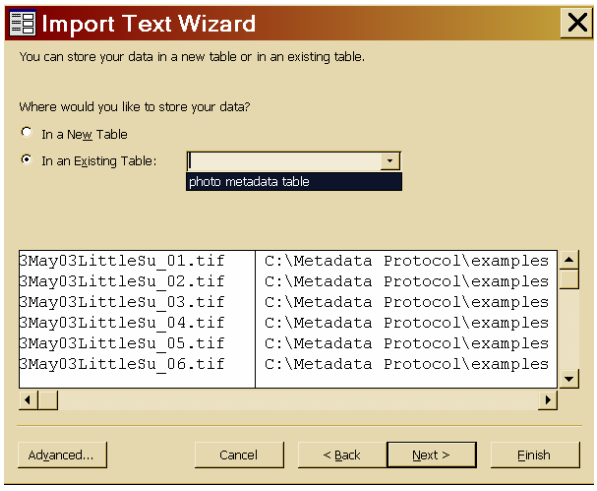
Restart the import using the text file without headings. Use the Advanced setting to apply the saved import specifications and continue through the import wizard steps.

Import Into Database Table

Import into new table or an existing table if you have already created a database table.

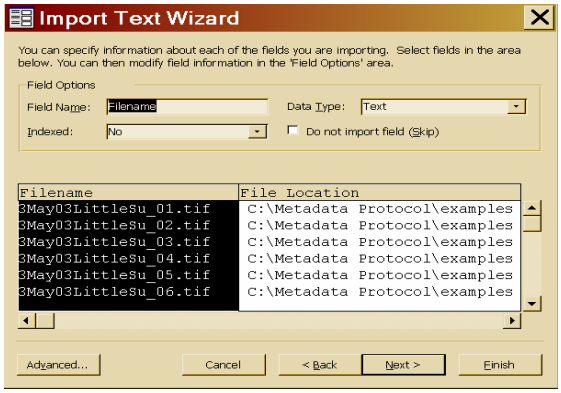






Field options

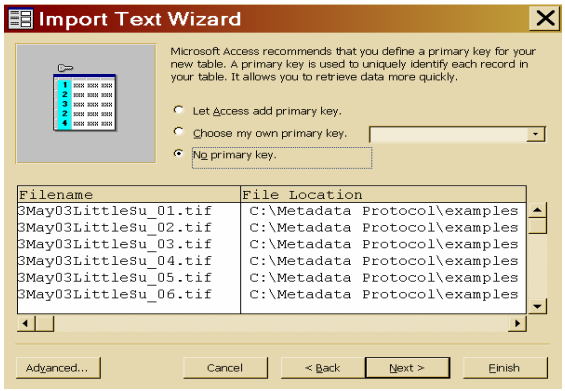
Next >



If you did not set field names in "Advanced" section in the beginning of the import, the import wizard will direct you to do so now. However, these column names will not be saved for import later. You may choose to do this if you are only planning to import one time. However, if you plan to import to the same table more than once, it is best to save import specifications in the Advanced settings to ensure accurate and easy import into the existing database table.

Primary Key

Next >



Let Access select primary key, or you can set primary key. It is easier to select the primary key later in Access, especially when importing new data to an existing table.

Importing more data later

After the initial database table is set up with column names, future file lists of metadata can be imported without the column names and imported directly into the existing table.

This is where you should be using a text file without headings.

You must be careful to make sure that all your exported metadata are in the same order as the original database table, so the text file columns will line up with your existing table columns. Another thing to consider is that if file names or other related data vary in length compared to earlier data, column widths may have to be adjusted accordingly in the import specifications. It is always prudent to scroll through the entire table to ensure that columns are lining up under the correct column names and that data is not being lost due to column widths.

Once a table is created, another option is to paste append new data within Access.

Step 5: Expanding the database table

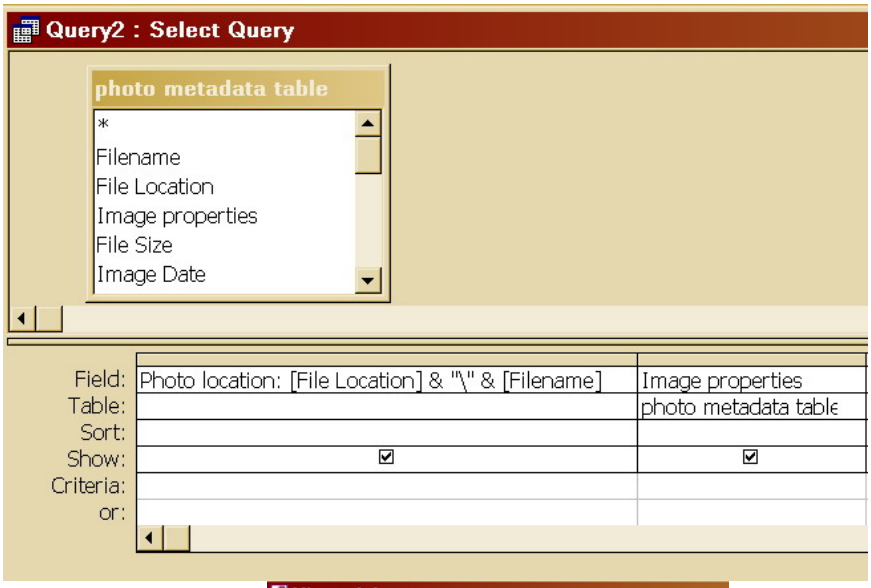
Once the metadata are imported and the database table is created, more columns can be added to the table. Keep the columns of imported metadata together as the first columns of the table in order for future metadata imports append to the correct columns.

USING HYPERLINKS TO LINK PHOTOS TO AN ACCESS DATABASE

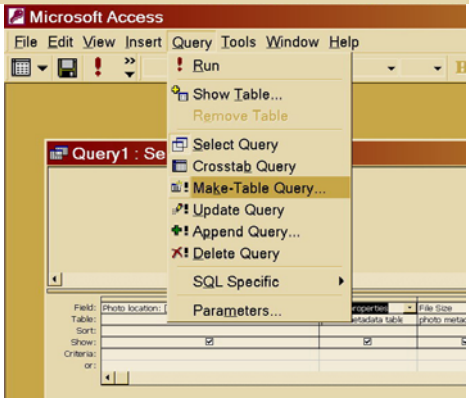
Once you have created your database by importing metadata into Access, you can create a hyperlink to your digital photos.

Create a Photo location column

Using a make-table query, select all columns of your database table. If you have imported the file location from the metadata properties, use the query example to the right. Create a new column by concatenating the file location and the file name columns.

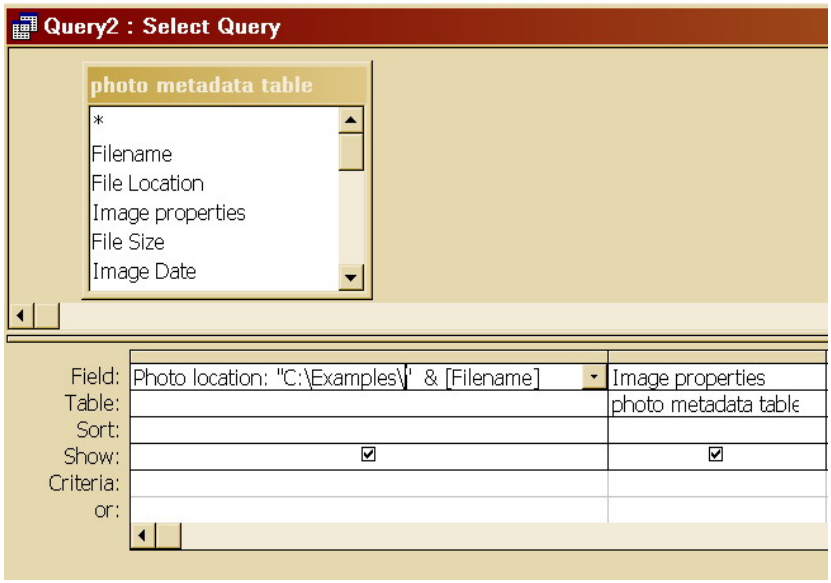


Run the "Make-Table" query and you now have a table with a photo file location column



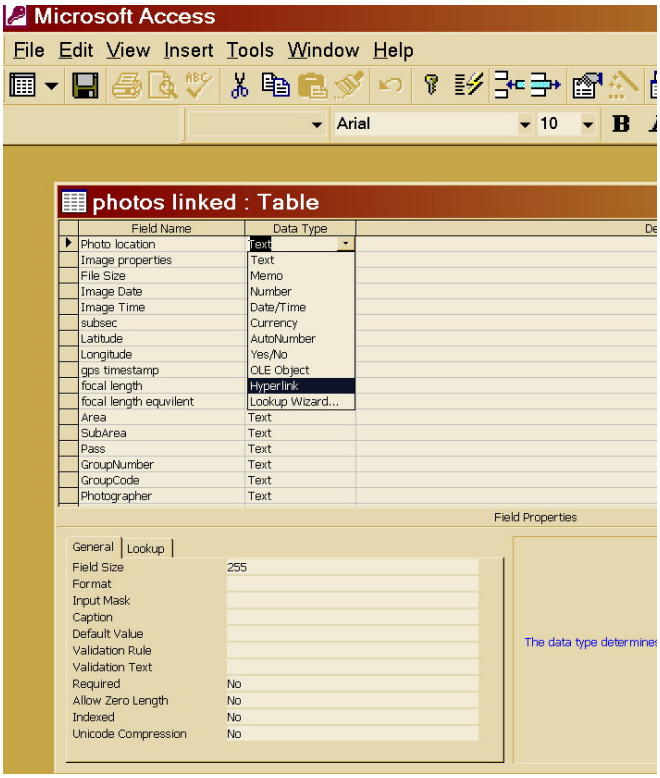
Changing locations of files

If you change the location of your photos, you can simply concatenate the new file location as shown in the query to the right. Rather than concatenating the previous "File location" from the metadata, you can simply type in the new file location and concatenate to the "Filename". Run the Make-Table query and set the "Photo location" field to hyperlink as shown in the previous example.



Hyperlink your photos

Next, within the design view of your new table, change the data type of the field “Photo location” to Hyperlink. Save your table and return to the table view. Click on the “Photo location” field and it will hyper link directly to the photo.



Microsoft Office Warning

If you view images in a browser other than a Microsoft product (e.g., ACDSee), a warning will appear that says that some files may be harmful. Click OK to view your images. Apparently this message is hard to eradicate in Access 2000 or 2002, but there is a registry edit workaround in Access 2003. We are exploring options to disable this warning message.